

**JEFF D. MAKHOLM**  
**Senior Vice President**

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Dr. Makholm concentrates on the issues surrounding the privatization, regulation and deregulation of energy and transportation industries—those that operate networks (such as oil and gas pipelines, electricity transmission and gas distribution systems, telecommunications and water utility systems) and those operating infrastructure business at specific sites, such as airports, electricity generation plants, oil refineries, gas treatment plants and sewage treatment plants. These issues include the broad categories of efficient pricing, market definition and the components of reasonable regulatory practices. Specific pricing issues include tariff design, incentive ratemaking, and the unbundling of prices and services. Issues of market definition include assessments of mergers, including the identification and measurement of market power. Issues of reasonable regulatory practices include the creation of credible and sustainable accounting rules for ratemaking as well as the establishment of administrative procedures for regulatory rulemaking and adjudication. On such issues among others, Dr. Makholm has prepared expert testimony, reports and statements, and has appeared as an expert witness in many state, federal and U.S. district court proceedings as well as before regulatory bodies and Parliamentary panels abroad.

Dr. Makholm's clients in the United States include privately held utility corporations, public corporations and government agencies. Focusing mainly in the areas of gas and electric utilities, he has represented dozens of gas distribution utilities, as well as both intrastate and interstate gas pipeline companies and gas producers. Dr. Makholm has also worked with many leading law firms engaged in natural gas and electricity issues.

Internationally, Dr. Makholm has directed an extensive number of projects in the utility and transportation businesses in 20 countries on six continents. These projects have involved work for investor-owned and regulated business as well as for governments and the World Bank. These projects have included advance pricing and regulatory work prior to major gas, railroad and toll highway privatizations (Poland, Argentina, Bolivia, Mexico, Chile and Australia), gas industry restructuring and/or pricing studies (Canada, China, Spain, Morocco, Mexico and the United Kingdom), utility mergers and market power analyses (New Zealand), gas development and and/or contract and financing studies (Tanzania, Egypt, Israel and Peru), regulatory studies (Chile, Argentina), and oil pipeline transport financing and regulation (Russia). As part of this work, Dr. Makholm has prepared reports, drafted regulations and conducted training sessions for many government, industry and regulatory personnel.

Dr. Makholm has published a number of articles in *Public Utilities Fortnightly*, *Natural Gas* and *The Electricity Journal*—many involving emerging issues of wholesale and retail competition in gas and electricity, including the issues of unbundled and competitive transport, secondary markets and stranded costs. He is a frequent speaker in the U.S. and abroad at conferences and seminars addressing market, pricing and regulatory issues for the energy and transportation sectors.

**EDUCATION**

UNIVERSITY OF WISCONSIN-MADISON,  
MADISON, WISCONSIN  
Ph.D., Economics, 1986  
Dissertation: Sources of Total Factor Productivity in the Electric Utility Industry  
M.A., Economics, 1985

BROWN UNIVERSITY  
PROVIDENCE, RHODE ISLAND  
Graduate Study, 1980-1981

UNIVERSITY OF WISCONSIN-MILWAUKEE  
MILWAUKEE, WISCONSIN  
M.A., Economics, 1980  
B.A., Economics, 1978

**EMPLOYMENT**

1996-present	<u>Senior Vice President.</u> National Economic Research Associates, Inc., (NERA) Boston, Massachusetts.
1986-1996	<u>Vice President/Senior Consultant.</u> National Economic Research Associates, Inc., (NERA) Boston, Massachusetts.
1987-1989	<u>Adjunct Professor.</u> College of Business Administration, Northeastern University, Boston, Massachusetts
1984-1986	<u>Consulting Economist.</u> National Economic Research Associates, Inc., (NERA) Madison, Wisconsin.
1983-1984	<u>Consulting Economist.</u> Madison Consulting Group, Madison, Wisconsin.
1981-1983	<u>Staff Economist.</u> Associated Utility Services, Inc., Moorestown, New Jersey.

**RECENT TESTIMONY (SINCE 2000)**

Before the Public Utilities Commission of Nevada, Rebuttal Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No. 07-09016. January 14, 2008. Subject: Stand-alone costs and cost allocation issues.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company. Docket No. 07-09016. January 11, 2008. Subject: Allocation of pipeline transport costs.

Testimony on behalf of Shelby Coal Holdings, LLC, Christian Coal Holdings, LLC and Marion Coal Holdings, LLC. Docket No. 07-0446. January 7, 2008. Subject: Pipeline certification and competition in pipeline transport market.

Affidavit of Jeff D. Makhholm on behalf of Consolidated Edison Company of New York, Docket No. OA08-13-000. January 7, 2008. Subject: Planning and allocation of electric transmission costs.

Before the Public Utilities Commission of Nevada, Direct Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No. 07-09016. December 14, 2007. Subject: Stand-alone costs and cost allocation issues.

Before the New Hampshire Public Service Commission, Docket No.. DE 07-064, invited appearance on an expert panel to present perspectives and answer questions on policies and practices regarding retail gas and electric distribution rate "decoupling," November 7, 2007.

Before the Public Utilities Commission of Nevada, Prefiled Direct Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No. 07-05019. May 15, 2007. Subject: Prudence of gas purchase costs.

Supplemental Report: Damages Arising from Solutia Inc.'s Rejection of Agreements with Decatur Energy Center, LLC and Calpine Central, L.P., Respectively, with King, Michael J. and McAleb, William B., April 20, 2007.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No. 06-12001. April 19, 2007. Subject: Stand-alone costs and cost allocation issues.

Expert Report: Damages Arising from Solutia Inc.'s Rejection of Agreements with Decatur Energy Center, LLC and Calpine Central, L.P., Respectively, with King, Michael J. and McAleb, William B., March 23, 2007.

In the Matter of J.P.Morgan Trust Company, *et al.* V. Mid-America Pipeline Company, *et.al.*, Docket No. 05-CV-2231-CM/JPO. March 21, 2007. Title: "Harm to Farmland's Coffeyville Refinery Expert Report", by Jeff. D. Makhholm.

Before the Public Utilities Commission of Nevada, Prefiled Direct Testimony on behalf of Nevada Power Company, Docket No. 07-01022. January 16, 2007. Subject: Prudence of gas purchase costs.

Before the Public Utilities Commission of the State of Hawaii , Supplemental Testimony of Jeff D. Makhholm on behalf of Hawaii Electric Light Company, Inc., Docket No. 05-0135. December 29, 2006. Subject: Energy cost adjustment clause.

**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Before the Public Utilities Commission of the State of Hawaii, Testimony of Jeff D. Makhholm on behalf of Hawaiian Electric Company, Inc., Docket No. 2006-0386. December 22, 2006. Subject: Energy cost adjustment clause.

Before the Public Utilities Commission of Nevada, Pre-filed Direct Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No. 06-12001. December 1, 2006. Subject: Stand-alone costs and cost allocation issues.

Before the State of New Jersey Board of Public Utilities, Prepared Reply Testimony of Jeff D. Makhholm on behalf of Public Service Electric & Gas, OAL Docket No. PUC1191-06 and BPU Docket No. EO05111005. November 3, 2006. Subject: Unregulated contract prices for telecommunication conduit rental contracts.

Before the State of New Jersey Board of Public Utilities, Rebuttal Testimony on behalf of the New Jersey American Water Company, Case No. WR06030257, October 10, 2006. Subject: Cost of Capital.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No. 06-05016. October 2, 2006. Subject: Prudence of gas purchase costs.

Before the Federal Energy Regulatory Commission, Reply Testimony of Jeff D. Makhholm on behalf of the State of Alaska, Docket No. OR05-2-001, August 11, 2006. Subject: Relative risk and capital structure for the Trans Alaska Pipeline System (TAPS).

Before the Maine Public Utilities Commission, Response to the Bench Analysis on behalf of Central Maine Power Company, Docket 2005-729. May 19, 2006. Subject: Specification of productivity offset for price cap formula.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No. 05-12001. May 17, 2006. Subject: Prudence of the company's gas hedging strategy.

Before the Public Utilities Commission of Nevada, Prefiled Direct Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company (Gas Division, WestPac Gas), Docket No. 06-0516. May 15, 2006. Subject: Prudence of the company's gas hedging strategy.

Before the State of New Jersey Board of Public Utilities, Testimony on behalf of the New Jersey American Water Company, Case No. WR06030257, March 29, 2006. Subject: Cost of Capital.

Before the Public Utilities Commission of Nevada, Direct Testimony of Jeff D. Makhholm on behalf of Nevada Power Company, Docket No.06-01016. January 17, 2006. Subject: Prudence of the company's gas hedging costs.

Before the New Brunswick Board of Commissioners of Public Utilities, Rebuttal Testimony of Jeff D. Makhholm on behalf of the Public Intervenor, Board Reference 2005-002. December 30, 2005 (original filing), January 23, 2006 (updated filing). Subject: Cost of capital.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No.05-12001. December 1, 2005. Subject: Prudence of the company's gas hedging costs.

**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Before the Public Utilities Commission of Nevada, Pre-Filed Rebuttal Testimony of Jeff D. Makhholm on behalf of Sierra Pacific Power Company, Docket No.05-9016. December 2, 2005. Subject: Prudence of the company's energy supply plan.

Before the Public Utilities Commission of Nevada, Pre-Filed Rebuttal Testimony of Jeff D. Makhholm on behalf of Nevada Power Company, Docket No.05-9017. December 2, 2005. Subject: Prudence of the company's energy supply plan.

Before the Public Utilities Commission of Ohio, Supplemental Testimony of Jeff D. Makhholm on behalf of The Dayton Power and Light Company. Case No. 05-276-EL-AIR. September 26, 2005. Subject: Cost of capital.

Before the Illinois Commerce Commission, Surrebuttal Testimony of Jeff D. Makhholm on behalf of Northern Illinois Gas Company d/b/a Nicor Gas Company. Case No. 04-0779. May 12, 2005. Subject: Cost of capital.

Before the United States Bankruptcy Court, Northern District of Texas, Fort Worth Division, Reply Report of Jeff D. Makhholm on behalf of Mirant Corporation, et al, Debtors. Case No. 03-46590 (Jointly Administered). April 12, 2005. Subject: Pipeline capacity valuation.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Docket No 05-1028. April 12, 2005. Subject: Prudence of gas purchase costs.

Before the Illinois Commerce Commission, Rebuttal Testimony of Jeff D. Makhholm on behalf of Northern Illinois Gas Company d/b/a Nicor Gas Company. Case No. 04-0779. April 5, 2005. Subject: Cost of capital.

Before the United States Bankruptcy Court, Northern District of Texas, Fort Worth Division, Report of Jeff D. Makhholm on behalf of Mirant Corporation, et al, Debtors. Case No. 03-46590 (Jointly Administered). March 22, 2005. Subject: Pipeline capacity valuation.

Before the Public Utilities Commission of the State of Oregon, Direct Testimony and Exhibits on behalf of Portland General Electric. Docket No.UE-88 Remand. February 15, 2005. Subject: The cost consequences of abandoning the regulatory compact in Oregon on prudent invested capital.

Before the Public Utilities Commission of Nevada, Testimony and Exhibits on behalf of Sierra Pacific Power Company. Docket No 05-1028. January 5, 2005. Subject: Prudence of gas purchase costs.

Before the Public Utility commission of Oregon, Direct Testimony on behalf of Portland General Electric. Docket No. UE-165. November 17, 2004. Subject: Power supply risk related to PGE's hydroelectric generation sources.

Before the Public Utilities Commission of Nevada, Testimony on behalf of Nevada Power Company. Docket No. 04-11028. November 10, 2004. Subject: Examination of the prudence of gas purchase and hedging decision in the Company's 2004 deferral case.

Before the Illinois Commerce Commission, Testimony on behalf of Nicor Gas Company. Docket No. 04-0779. November 1, 2004. Subject: Cost of Capital.

Rebuttal Report for an ad-hoc arbitration on behalf of CITIBANK, N.A. in their case against NEW HAMPSHIRE INSURANCE COMPANY. Policy No. 576/ MF5113500. October 15, 2004.

**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of a toll-road concession's assets in Argentina.

Testimony before the ICSID (International Center for the Settlement of Investment Disputes) on behalf of Azurix Corp., in the case of Azurix Corp v. Government of Argentina in Paris, France, October 11th, 2004. Subject: Expropriation of a water utility concession in the province of Buenos Aires.

Before the Circuit Court of Fairfax, Virginia, Testimony of Jeff D. Makhholm on behalf of Upper Occoquan Sewage Authority in the case against Blake Construction Co., Inc., Poole and Kent, a Joint Venture. Case No. 206595. October 1, 2004. Subject: Valuation of capacity expansion project.

Expert Report for an ad-hoc arbitration on behalf of CITIBANK, N.A. in their case against NEW HAMPSHIRE INSURANCE COMPANY. Policy No. 576/ MF5113500. October 1, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of a toll-road concession's assets in Argentina.

Rebuttal Report before the London Courts of International Arbitration on behalf of CITIBANK, N.A. AND DRESDNER BANK AG in their case against AIG EUROPE (UK) LTD. AND SOVEREIGN RISK INSURANCE. Arbitration No. 3473. September 17, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of electric utility assets in Argentina.

Expert Report before the London Courts of International Arbitration on behalf of CITIBANK, N.A. AND DRESDNER BANK AG in their case against AIG EUROPE (UK) LTD. AND SOVEREIGN RISK INSURANCE. Arbitration No. 3473. August 6, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of electric utility assets in Argentina.

Rebuttal Report before the ICSID (International Center for the Settlement of Investment Disputes) on behalf of Azurix Corp., in the case of Azurix Corp v. Government of Argentina, April 15th, 2004. Subject: Expropriation of a water utility concession in the province of Buenos Aires.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Case No: 03-12002. March 29, 2004. Subject: Rebutted argument that there was a link between the merger and the cost of electricity in the post-merger period.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Nevada Power Company. Case No: 03-10001 and 03-10002. February 5, 2004. Subject: Rebutted argument that there was a link between the merger and the cost of electricity in the post-merger period.

Before the New Zealand Commerce Commission, Testimony on behalf of Orion New Zealand. November 5, 2003. Subject: Productivity measures used in resetting the price path thresholds for electricity distributors in New Zealand.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Case No: 03-5021. September 2, 2003. Subject: Structure in place for governing and overseeing hedging/risk management process at Westpac Utilities, an operating division of Sierra Pacific Power Company.

Before the State of Maine Public Utilities Commission, Rebuttal Testimony on behalf of FairPoint New England Telephone Companies. July 11, 2003. Subject: Cost of capital.

**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Before the Public Utilities Commission of Nevada, Testimony on behalf of Sierra Pacific Power Company. Case No: 03-5021. May 14, 2003. Subject: Structure in place for governing and overseeing hedging/risk management process at Westpac Utilities, an operating division of Sierra Pacific Power Company.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Case No: 03-1014. May 5, 2003. Subject: Prudence of gas procurement and hedging program.

Before the State of Maine Public Utilities Commission, Direct Testimony on behalf of FairPoint New England Telephone Companies. April 7, 2003. Subject: Cost of capital.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Nevada Power Company. Case No: 02-11021. March 31, 2003. Subject: Prudence of gas procurement and hedging program.

Before Federal Communications Commission, Testimony on behalf of Iowa Telecommunications Services, Inc. Case No. March 25, 2003. Subject: Cost of capital.

Before Federal Energy Regulatory Commission, Testimony on behalf of PPL Wallingford Energy LLC. Case No: ERO3-421-000. January 9, 2003. Subject: Cost of equity.

Before the State of New Hampshire Public Utilities Commission, Rebuttal Testimony on behalf of Kearsarge Telephone Company. Case No. DT 01-221. December 20, 2002. Subject: Rebuttal on cost of equity.

Before the New York State Public Service Commission, Affidavit of Jeff D. Makholm in support of Rochester Gas and Electric Corporation's Response to Staff's November 8, 2002 filing. Case No. 02-E-0198, 02-G-0199. November 14, 2002. Subject: Respond to staff's filing with respect to the rate-of-return and risk impacts of various regulatory mechanisms.

Before the Public Utility Commission of Texas, Rebuttal Testimony on behalf of American Electric Power Company, Inc., Mutual energy CPL, LP, Mutual Energy WTU, LP and Centrica PLC, Centrica N.S. Holding, Inc., Centrica Holdco, Inc.. Case No. 25957. October 28, 2002. Subject: Impact of the merger on competition in the retail electric market.

Expert testimony on behalf of Azurix Corp. before the ICSID (International Center for the Settlement of Investment Disputes), in the case of Azurix Corp v. Government of Argentina, October 15, 2002. Subject: Expropriation of a water utility concession in the province of Buenos Aires.

Before the State of New York Public Service Commission, Rebuttal Testimony on behalf of Rochester Gas and Electric Corporation. Case No. 02-E-0198, Case No. 02-G-0199. September 30, 2002. Subject: Cost of capital

Before the Connecticut Department of Public Utility Control, Update and Rebuttal Testimony (Response to Interrogatory EL-174) on behalf of The United Illuminating Company, Case No. 01-10-10, April 4, 2002. Subject: Cost of capital.

Before the State of New York Public Service Commission, Direct Testimony on behalf of Rochester Gas and Electric Corporation. Case No. 02-E-0198, Case No. 02-G-0199. February 15, 2002. Subject: Cost of capital.

**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Before the Alberta Energy and Utilities Board, Update of Evidence on behalf of UtiliCorp Networks Canada, November 30, 2001. Subject: Testimony on the elements of the company's performance based regulation plan.

Before the Connecticut Department of Public Utility Control, Direct Testimony on behalf of The United Illuminating Company, Case No. 01-10-10, November 15, 2001. Subject: Cost of capital.

Before the Illinois Commerce Commission, Surrebuttal Testimony on behalf of Commonwealth Edison Company, Case No. 01-0423, October 24, 2001. Subject: Economic pricing for unbundled retail distribution services.

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Commonwealth Edison Company, Case No. 01-0423, September 18, 2001. Subject: Economic pricing for unbundled retail distribution services.

Before the State of New York Public Service Commission, Prepared Rebuttal Testimony on behalf of New York State Electric & Gas Corporation. Case 01-E-0359. September 12, 2001. Subject: Electric price protection plan

Before the State of Maine Public Utilities Commission, Joint Rebuttal Testimony of Jeff D. Makhholm and Charles J. Zarkadas on behalf of Community Service Telephone Company. September 6, 2001. Subject: Cost of equity capital.

Before the Public Service Commission of the State of Missouri, Rebuttal Testimony on behalf of Gateway Pipeline Company. Case GM-2001-595. August 20, 2001. Subject: Acquisition of Capital Stock of Utilicorp Pipeline Systems, and connection.

Before the State of New York Public Service Commission, Prepared Direct Testimony on behalf of New York State Electric & Gas Corporation. Case 01-E-0359. August 3, 2001. Subject: Electric price protection plan.

Before the Federal Energy Regulatory Commission, Prepared Answering Testimony on behalf of the Association of Oil Pipe Lines. Case No: OR96-2-000. June 21, 2001. Subject: Light-handed regulation of oil pipeline tariffs.

Before the Illinois Commerce Commission, Direct Testimony on behalf of Commonwealth Edison Company, Case No. 01-0423, June 1, 2001. Subject: Economic pricing for unbundled retail distribution services.

Before the Federal Energy Regulatory Commission, Affidavit of Jeff D. Makhholm, Ph.D. on behalf of Florida Power & Light Co. May 31, 2001. Subject: Pricing of transmission services.

Before the Public Utility Commission of the State of Oregon, Rebuttal Testimony on behalf of Portland General Electric Company. May 21, 2001. Subject: Cost of capital.

Before the State of Maine Public Utilities Commission, Direct Testimony of Jeff D. Makhholm and Charles J. Zarkadas on behalf of Community Service Telephone Company. April 4, 2001. Subject: Cost of equity capital.

Before the State of New Jersey Board of Public Utilities, Cross-Answering Testimony on behalf of Public Service Electric and Gas Company, Case No. GM00080564, March 26, 2001. Subject: Forecasting the net market value for natural gas transportation and storage contracts.



**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Before the Indiana Utility Regulatory Commission. Joint Testimony of Jeff D. Makhholm and Charles J. Zarkadas on behalf of Tipton Telephone Company, Inc, February 23, 2001. Subject: Cost of capital.

Before the Supreme Court of Victoria at Melbourne, in the matter of an appeal brought by TXU Electricity Limited of the Final Determination of the Office of the Regulator General of the 2001 to 2005 tariffs for the Victorian electricity distributors. Testimony on behalf the Office of the Regulator General, February 11, 2001. Subject: The distinctions between price cap and rate of return regulatory practices.

Before the Australian Competition Tribunal. Statement on behalf of the National Competition Council regarding the application under section 38(1) of the Gas Pipelines Access Law for review of the decision by the Minister for Industry, Science and Resources to Cover (i.e., regulate) the Eastern Gas Pipeline pursuant to the provisions of the National Third Party Access Code for Natural Gas Pipeline Systems and the Gas Pipelines Access Law, January 19, 2001. Subject: Evaluation of the criteria for regulating an interstate gas pipeline.

Before the Public Utility Commission of Texas. Rebuttal Testimony on behalf of American Electric Power Texas Companies (Central Power & Light Company, Southwest Electric Power Company, West Texas Utilities Company), Entergy Gulf States, Inc., Reliant Energy HL&P, Southwestern Public Service Company, Texas-New Mexico Power Company, and TXU Electric Company. October 27, 2000. Subject: Capital structure and allowed return on equity.

Before the Federal Energy Regulatory Commission, "Assessment of PJM Owner's Transmission Enhancement Package," prepared in support of the PJM (Pennsylvania, New Jersey, Maryland) electricity transmission owners as part of their Order No. 2000 compliance filing. Docket No. RT01-2, October 11, 2000. Subject: Analysis of incentive package for transmission efficiency.

Before the Appeal Panel under Section 38(2) of the Office of the Regulator-General Act 1994, Victoria, Australia. In the matter of an appeal pursuant to s.37 of the Act brought by United Energy Ltd., Testimony on behalf of the Office of the Regulator General, October 10, 2000. Subject: The distinctions between price cap and traditional cost-based regulatory practices.

Before the Alberta Energy and Utilities Board, Evidence on behalf of UtiliCorp Networks Canada, September 1, 2000. Subject: Testimony on the elements of the company's performance based regulation plan.

Before the State of Maine Public Utilities Commission, Surrebuttal Testimony on behalf of Central Maine Power Company, Case No. 99-666, August 10, 2000. Subject: Empirical analysis and productivity offset for price cap formula.

Before the State of New Jersey Board of Public Utilities, Testimony on behalf of Public Service Electric and Gas Company, Case No. GM00080564, July 26, 2000. Subject: Forecasting the net market value for natural gas transportation and storage contracts.

Before the State of Maine Public Utilities Commission, Rebuttal Testimony on behalf of Central Maine Power Company, Case No. 99-666, June 22, 2000. Subject: Empirical analysis and productivity offset for price cap formula.

Before the Illinois Commerce Commission, Surrebuttal Testimony on behalf of Commonwealth Edison Company, Case No. 99-0013, Phase III, June 12, 2000. Subject: Investigation Concerning the Unbundling of delivery Services Under Section 16-108 of the Public Utilities Act.

**RECENT TESTIMONY (SINCE 2000 CONTINUED)**

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Commonwealth Edison Company, Case No. 99-0013, Phase III, June 5, 2000. Subject: Investigation Concerning the Unbundling of delivery Services Under Section 16-108 of the Public Utilities Act.

## PUBLICATIONS

“Decoupling” for Energy Distributors: Changing 19th Century Tariff Structures To Address 21st Century Energy Markets,” *Energy Law Journal* (forthcoming, Spring 2008).

“Electricity Transmission Cost Allocation: A Throwback to an Earlier Era in Gas Transmission,” *The Electricity Journal*, Vol. 20, Issue 10 (December 2007), pp. 13-25

“Elusive Efficiency and the X-Factor in Incentive Regulation: The Törnqvist v. DEA/Malquist Dispute,” in Voll, S.P., and King, M.K. (Eds.), *The Line in the Sand: The Shifting Boundaries Between Markets and Regulation in Network Industries*, National Economic Research Associates, White Plains, New York (2007), pp. 95-115.

“Theoretische Rechtfertigung des X-Faktors” (“Theoretical Justification for X-Factors”), *Energiewirtschaftliche Tagesfragen*, Vol. 47, No. 3 (March 2007), pp. 50-52.

“Ex Ante or Ex Post? Risk, Hedging and Prudence in the Restructured Power Business,” with Meehan, E.T., and Sullivan, J.E., *The Electricity Journal*, Vol. 19, No 3 (April 2006), pp. 11-29.

“The Thaw: The End of the Ice Age for American Utility Rate Cases,” with Parmesano, H., *The Electricity Journal*, Vol. 17, No. 4 (July 2004), pp.69-74.

“In Defense of the ‘Gold Standard,’” *Public Utilities Fortnightly*, Vol. 141, No. 10 (May, 2003), pp. 12-18.

“Incentive Regulation Meets Electricity Transmission on a Grand Scale: FERC Order No. 2000 and PBR,” *The Electricity Journal*, Vol. 13, No. 2 (May 2000), pp.57-64.

“ISO’s Not the Answer for Gas,” *Natural Gas*, Vol. 14, No. 5 (December 1997), pp. 1-6.

*Utility Regulation 1997: Economic Regulation of Utilities and Network Industries Worldwide* (Chapter on United States), Center for the Study of Regulated Industries, (ISBN 1-901597-00-8) 1997.

“X Marks the Spot: How to Calculate Price Caps for the Distribution Function,” *Public Utilities Fortnightly*, Vol. 135, No. 22 (December 1997), p. 52.

“FERC Takes the Wrong Path in Pricing Policy,” *Natural Gas*, Vol. 12, No. 3 (September, 1995), pp. 7-11.

*The Distribution and Pricing of Sichuan Natural Gas*, Chonxing University Press, Chonxing, China (ISBN 7-5624 -1006-2/F 94), 1995.

“Secondary Market Can Compete,” *Natural Gas*, Vol. 11, No. 3 (October 1994), pp. 13-17.

“Gas Pipeline Capacity: Who Owns It? Who Profits? How Much?” *Public Utilities Fortnightly*, Vol. 132, No. 18 (October 1994), pp. 17-20.

“Calculating Fairness,” with Sander, D.O., *Public Utilities Fortnightly*, Vol. 131, No. 21 (November 1993), pp. 25-29.

“The Risk Sharing Strawman,” *Public Utilities Fortnightly*, Vol. 122, No. 1 (July 1988), pp. 24-29.

“The FERC Discounted Cash Flow: A Compromise in the Wrong Direction,” with C. J. Cicchetti, *Public Utilities Fortnightly*, Vol. 120, No.1 (July 1987), pp. 11-15.

**UNPUBLISHED WORKING PAPERS**

“Seeking Competition and Supply Security in Natural Gas: The US Experience and European Challenge,” Prepared for the 1st CESSA Conference, Berlin University of Technology, Berlin, Germany, May 31, 2007.

“The Theory of Relationship Specific Investments, Long-Term Contracts and Gas Pipeline Development in the United States,” paper given at the Conference on Energy Economics and Technology at the Dresden University of Technology, Dresden, Germany, April 21, 2006.

“Benchmarking, Rate Cases and Regulatory Commitment,” paper given at the Australian Competition & Consumer Commission’s Incentive Regulation and Overseas Developments Conference, Sydney, Australia, November 14, 1999

“Price Cap Plans for Electricity Distribution Companies Using TFP Analysis,” with Quinn, M.J., NERA Working Paper, July 23, 1997.

“Rocks on the Road to Effective Regulation: The Necessary Elements of Sound Energy Regulation,” paper presented at the Brazil-U.S. Aspen Global Forum, December 5, 1996.

“Profit Sharing and “Sliding Scale” Regimes,” NERA Working Paper, Quinn, M.J., and Augustine, C., February 29, 1996.

“Four Common Errors in Applying the DCF Model in Utility Rate Cases,” with Sander, D.O., NERA Working Paper, February 1992.

“Pareto Optimality through Non-Collusive Bilateral Monopoly with Cost-Of-Service Regulation,” with Cicchetti, C.J., NERA Working Paper, April 1988.

**RECENT SPEECHES**

“Electricity Transmission Cost Allocation in New England: A Throwback to an Earlier Era in Gas Transmission.” Speech given at Law Seminars International, Energy in the Northeast conference, Boston, Massachusetts, October 18-19, 2007.

“Rate Decoupling and Associated Rate and Cost Issues.” Speech given at American Gas Association (AGA) Legal Forum. Vail, Colorado, July 15- 17, 2007.

“Seeking Competition and Supply Security in Natural Gas: The US Experience and European Challenge” Speech given before the 1<sup>st</sup> CESSA Conference, Berlin, Germany, May 31-June 1, 2007.

“Toward a Regulatory Equilibrium in Gas Hedging,” Speech given before the Electric Utility Consultants’ Conference: Utility Hedging in an Era of Natural Gas Price Volatility, Arlington, Virginia, October 4, 2006.

“A Gas Network to Meet the Needs of New Electricity Generators,” Speech given before the Ontario Energy Association, Ontario, Canada, June 23, 2005.

“Forks in the Road for Electricity Transmission,” Speech given at the Electricity Industry Regulation and Restructuring conference by The Salt River Project and The Arizona Republic, October 11, 2002.

“Role of Yardsticks in Cost & Service Quality Regulation,” Speech to the London Regulated Industries Group, November 30, 2000.

“Natural Gas Issues: Retail Competition, LDC Gas Rate Unbundling, and Performance Based Rates”, presented at the Wisconsin Public Utility Institute, November 17, 2000.

“Performance Based Ratemaking (PBR) in Restructured Markets,” Speech to Edison Electric Institute Seminar in San Antonio Texas, April 27, 2000.

“Benchmarking versus Rate Cases and the Half Live of Regulatory Commitment,” Speech given at the Australian Competition & Consumer Commission’s Incentive Regulation and Overseas Development Conference, Sydney, Australia, November 19, 1999.

“Benchmarking, Rate Cases and Regulatory Commitment,” Speech given at the Australian Competition & Consumer Commission’s Incentive Regulation and Overseas Developments Conference, Sydney, Australia, November 14, 1999.

“Gas and Electricity Sector Convergence: Economic Policy Implications,” Presentation at Energy Week ’99, “The Global Shakeout,” The World Bank, Washington D.C., April 6-8, 1999.

“Gas and Electricity Sector Convergence: Economic Policy Implications,” Presentation/Training at the Economic Development Institute, The World Bank, Washington D.C., December 8-9, 1998.

“Sustainable Regulation for Russian Oil Pipelines,” Presentation at Pipeline Transportation: A Linkage Between Petroleum Production and Consumers, Moscow, June 25, 1997.

“Rocks on the Road to Effective Regulation,” Presentation to Brazil/US Aspen Global Forum, Aspen, Colorado, December 5-8, 1996.

“Stranded Cost Case Studies in the Gas Industry: Promoting Competition Quickly,” —Speech presented at the MCLE Seminar: Retail Utility Deregulation, Boston, MA, June 17, 1996.

**RECENT SPEECHES (CONTINUED)**

“Why Regulate Anyway? The Tough Search for Business-As-Usual Regulation,”—Panelist at St. Louis 1996, The Fifth Annual DOE-NARUC Natural Gas Conference, St. Louis, Missouri, April 30, 1996.

“Antitrust for Utilities: Treating Them Just Like Everyone Else”—Panelist at St. Louis 1996, The Fifth Annual DOE-NARUC Natural Gas Conference, St. Louis, Missouri, April 29, 1996.

“Natural Gas Pricing: The First Step in Transforming Natural Gas Industries”—One-Day Interactive Workshop on Pricing Strategy at The Future of Natural Gas in the Mediterranean Conference, Milan, Italy, March 27, 1996.

“Open Access in Gas Transmission,”—Speech given at the New England Chapter of the International Association for Energy Economics, Boston, Massachusetts, December 13, 1995.

“Light-Handed Regulation for Interstate Gas Pipelines,”—Speech given at the Twenty-Seventh Annual Institute of Public Utilities Conference, Williamsburg, Virginia, December 12, 1995.

“Ending Cost of Service Ratemaking,”—Speech given to the Electric Industry Restructuring Roundtable, Boston, Massachusetts, October 2, 1995.

“Promoting Markets for Transmission: Economic Engineering or Genuine Competition?”—Speech given at The Forty-Ninth Annual Meeting of the Federal Energy Bar Association, Inc., May 17, 1995.

“End-Use Competition Between Gas and Electricity: Problems of Considering Gas and Electric Regulatory Reform Separately,”—Panelist on panel at ORLANDO ‘95, The Fourth Annual DOE-NARUC Natural Gas Conference, Orlando, Florida, February 14, 1995.

“Incremental Pricing: Not a Quantum Leap,”—Speech given at the 1995 Natural Gas Ratemaking Strategies Conference, Houston, Texas, February 3, 1995.

“The Feasibility of Competition in the Interstate Pipeline Market,”—Speech given at the Institute of Public Utilities Twenty-Sixth Annual Conference, Williamsburg, Virginia, December 13, 1994.

“A Mirror on the Evolution of the Gas Industry: The Views from Within the Business and from Abroad,”—Speech given at the 1994 LDC Meeting-ANR Pipeline Company, October 4, 1994.

“Creating New Markets Out of Old Utility Services,” —Speech given at the Fifteenth Annual NERA Santa Fe Antitrust and Trade Regulation Seminar, Santa Fe, New Mexico, July 9, 1994.

“Sources of and Prospects for Privatization in Developed and Underdeveloped Economies,” —Speech given at the Spring Conference of the International Political Economy Concentration and the National Center for International Studies at Columbia University, New York, March 30, 1994.

“Experiencias en el Desarrollo del Mercado de Gas Natural (Experiences in gas market development),” —Speech given at the conference “Perspectivas y Desarrollo de Mercado de Gas Natural,” Centro de Extensión de la Pontificia Universidad Católica de Chile, November 16, 1993.

“The Role of Rate of Return Analysis in a More Progressive Regulatory Environment,”—Speech given at the Twenty-Fifth Financial Forum held by the National Society of Rate of Return Analysts, Philadelphia, Pennsylvania, April 27, 1993.

“Privatization of Energy and Natural Resources,”—Speech given at the International Privatization Conference “Practical Issues and Solutions in the New World Order,” New York, New York, November 20, 1992.

## RECENT INTERNATIONAL REPORTS

“Consultation Paper: Development of Approaches Towards Regulating Tariffs for Petroleum Pipelines, Storage and Loading Facilities in South Africa.” Report prepared for the National Energy Regulator of South on the determination of economically feasible approaches towards establishing revenue requirements, regulating the setting/approval of tariffs, and developing rules, guidelines and framework regarding regulatory accounts for the petroleum pipelines, storage, and loading facilities in South Africa. December 14, 2006.

“Regulatory Assessment of the Turkish Electricity Sector.” Report prepared for Prisma Energy on the examination of the economic and regulatory risks facing investors in the privatization of the energy infrastructure of Turkey. December 6, 2006.

“Calculation of the X-Factor in the 2nd Reference Report of the Bundesnetzagentur.” Report prepared for E. ON Ruhrgas, Germany: Design of a regulatory method based on comparison of average tariffs, consistent with new German legislation on the regulation of gas transmission networks. April 21, 2006. (with Graham Shuttleworth and Michael Kraus).

A Critique of CEPA’s Report on “Productivity Improvements in Distribution Network Operators:” A report for EDF Energy (with Graham Shuttleworth). December 16, 2003.

Advised on Fare Regulation Issues related to the Impending Merger of the MTRC and KCRC Railroad Companies in Hong Kong, Mercer Consulting on behalf of MTRC, 2003-2004.

“Natural Gas Pipeline Access Regulation”. Report prepared for BHP Petroleum Pty Ltd., May 31, 2001.

“Manual de Procedimientos para el Sistema Uniforme de Cuentas Regulatorias Eléctricas (SUCRE) de México” (April 2000). The report includes an explanation of each of the accounts needed for regulation, recording procedures and the structure the information should take when reporting to the regulator.

“Investigation into Petronets’ Liquid Fuels Pipeline Tariffs: Final Report” (March 9<sup>th</sup>, 2000). This report presents NERA opinions in the quasi-arbitration of the tariffs disputes in the oil industry in South Africa for their liquids pipelines.

“Seeking Genuine Gas Competition in NSW”, prepared for BHP Petroleum Pty. Ltd., February 18, 2000.

“Análisis y Revisión del Recurso de Revocatoria Interpuesto por la Compañía Boliviana de Energía S.A. (COBEE) a la Resolución SSDE N° 92/99 de la Superintendencia de Electricidad” (September 6, 1999). This report represents NERA’s opinion on COBEE’s appeal in the electricity tariff review process in Bolivia (report in spanish).

“Gas Sector Regulation Consultancy Services” report prepared for the Vietnam Oil and Gas Corporation, August 10, 1999.

“Natural Gas Demand Estimation for Guatemala, Honduras and El Salvador” (July 19<sup>th</sup>, 1999). This report done for an international consortium of companies presents calculations of prices and volumes of natural gas demand for three Central American countries if a pipeline is built from Mexico.

“Comments on East Australian Pipeline Limited Access Arrangements: (July 15, 1999). Report prepared on behalf of Incitec Ltd.

**RECENT INTERNATIONAL REPORTS (CONTINUED)**

“Supplementary Submission to IPART on AGLGN’s Proposed Access Arrangements” on behalf of Incitec Limited (April 27th, 1999). This submission discusses reload practices, customer contributions, operating expenses and recalculates charges for a user of the distribution network in New South Wales, Australia.

“Supplementary Submission to IPART on AGLGN’s Proposed Costs and Tariffs” on behalf of BHP (April 15th, 1999). This submission explains how NERA recalculated charges for AGLGN in New South Wales, Australia.

“Initial Comments on AGLGN’s Revised Access Arrangement Information” on behalf of BHP (March 20th, 1999). This submission presents NERA’s comment to AGLGN submission to IPART in New South Wales, Australia.

“International Restructuring Experience” (February 12th, 1999). This paper surveys a number of countries whose experience of restructuring and competition in the electricity sector is directly relevant to the proposed changes in Mexico – Argentina, Australia, Chile, Guatemala, New Zealand, Norway, Spain, the US and the UK

“Report I: Review of the Regulatory Framework” (January 18th, 1999). This report presents the options for a natural gas framework in Peru.

“Conceptual Framework for the Reform of the Electricity Sector in Mexico: White Paper” (November 24th, 1998). This report represents the White Paper for restructuring of the electricity sector in Mexico which is being used in Congress for debate.

“Precios del Gas Natural para la Generación de Electricidad en el Perú” (November 16th, 1998). This report analyzes different alternatives for the treatment of natural gas prices in the electricity tariff model (report in Spanish).

“Tariffs and Subsidies: Report for the Tariffs Group” (November 10th, 1998). This report presents recommendation on the path for tariffs and subsidies for 1999 to the Electricity Tariffs Group of the Government of Mexico.

“Gasoducto México-Guatemala: Informe Final” (October 22nd, 1998). This report analyzes the legal and regulatory framework in both Mexico and Guatemala and costs and volumes for the building of a natural gas pipeline connecting both countries. A copy of the report was given by President Zedillo (Mexico) to President Arzú (Guatemala) (report in Spanish).

“Checks and Balances in Regulating Power Pools: Seven case Studies. A Report for the Electricity Pool of England and Wales” (September 10th, 1998). This report surveys the regulation of power pools in electricity industries around the world.

“Fuels Policy Group: Recommendations” (September 11th, 1998). This report presents recommendations to the Government of Mexico on their fuels policies for the electricity sector.

“Análisis de Costos e Inversiones. Revisión Tarifaria de Transener” (August 25, 1998). Report given to ENRE (the Argentinean electricity regulator) on behalf of a Consortium of Generators on the analysis of costs and investments to be considered for the revenue requirement of the electricity transmission company (report in Spanish).

“Central America Pipeline: Regulatory Analysis and Proposal” (July 28, 1998). This report presents the regulatory analysis and development of a fiscal, legal and commercial framework proposal for gas import, transportation, distribution and marketing in El Salvador, Honduras and Guatemala regarding the proposed Central American Pipeline.



**RECENT INTERNATIONAL REPORTS (CONTINUED)**

“Energy Regulation in El Salvador” (July 28, 1998). This report presents a deep analysis of the electricity and natural gas regulatory, legal and tax frameworks in El Salvador.

“Energy Regulation in Guatemala” (July 28, 1998). This report presents a deep analysis of the electricity and natural gas regulatory, legal and tax frameworks in Guatemala.

“The Cost of Capital for Gas Transmission and Distribution Companies in Victoria” (June 22, 1998). Report prepared for BHP Petroleum Pty Ltd.

“Principios Económicos Básicos de Tarificación de Transmisión Eléctrica. Revisión Tarifaria de Transener” (May 26, 1998). The main purpose for this report was to provide an economic and regulatory analysis of laws, decrees, license and documents of the tender to provide advise in the tariff review of Transener (the electricity transmission company in Argentina), to present an economic analysis of transmission tariffs and to provide an opinion on specific topics to be discussed in the public hearing. This report was written for a consortium of generators in Argentina (reports in English and Spanish)

“Asesoría en la Fijación de Tarifas de Transener y Normativa del Transporte, Benchmarking Study” (May 26, 1998). This report compares the costs of Transener (the electricity transmission company in Argentina) with those of other companies elsewhere for a consortium of generators (the electricity transmission company in Argentina).

“International Regulation Tool Kit: Argentina” (March 20, 1998). This document describes the natural gas regulatory framework in Argentina for BG.

“Tarificación de los Servicios Que Prestan las Terminales de Gas LP” (January 9, 1998). The final report given to PEMEX Gas y Petroquímica Básica (México) for the determination of rates for LPG terminals.

“NERA-Pérez Companc Distribution Tariff Model” (January 5, 1998). This report explains the methodology behind NERA’s calculations of distribution tariffs for Pérez Companc in Monterrey.

“Monterrey Natural Gas Market Assessment,” (January 5, 1998). A series of reports were written to present the results of the market study of the demand for natural gas in the geographic zone of Monterrey to a company interested in bidding for the natural gas distributorship.

“Resolving the Question of Escalation of Phases (bb) and (cc) Under the Maui Gas Sale and Purchase Contract”, prepared for the New Zealand Treasury, December 16, 1997.

“Timetable and Regulatory Review for the Monterrey International Public Tender,” (December 5, 1997). A description of the necessary steps to bid for a distribution company as well as an explanation and analysis of natural regulations in Mexico for Pérez Companc.

“Economic Issues in the PFR for 18.3.1(I)(bb) & (cc)”, prepared for the New Zealand Treasury, November 17, 1997.

“NERA’s Distribution Tariff Model” (October 29, 1997). This report explains the methodology behind NERA’s calculations of distribution tariffs for MetroGas.

“Evaluation Design Standards for MetroGas,” (October 24, 1997). This report dealt with the analytical support resulting from work with MetroGas to create a meticulously-documented security criterion analysis that supported its efforts to obtain due recognition—and appropriate tariff treatment—for its costs.

**RECENT INTERNATIONAL REPORTS (CONTINUED)**

“Ghana Natural Gas Market Assessment,” prepared for the Ministry of Mines and Energy, Ghana (March-July, 1997). A series of four reports assessing prospective gas demand usage and netback prices for a number of proposed pipeline project alternatives.

“Final Report for Russian Oil Transportation & Export Study: Commercial, Contractual & Regulatory Component,” prepared for The World Bank, June 25, 1997.

Response to FIEL’s criticisms regarding NERA’s report “Cálculo del Factor de Eficiencia (X)” (June 2, 1997).

“Impacts on Pemex of Natural Gas Regulations” prepared for Pemex Gas y Petroquímica Básica México, May 21, 1997.

“Market Models for Victoria’s Gas Industry: A Review of Options,” April 1997, prepared for Broken Hill Proprietary (BHP) Petroleum, to propose an alternative model for gas industry restructuring in Victoria, Australia.

“New Market Arrangements for the Victorian Gas Industry,” prepared for Broken Hill Proprietary Petroleum; March 13, 1997.

“CEG Privatization: Comments to the Regulatory Framework,” prepared for Capitaltec Consultoria Economica SA describing our comments with respect to the regulatory framework and the license proposed in the privatization of Riogas and CEG in Rio de Janeiro, Brazil; March 7, 1997.

“Determination of the Efficiency Factor (X),” prepared for ENARGAS, Argentina, January 24, 1997.

“Determination of Costs and Prices for Natural Gas Transmission,” prepared for Pemex Gas y Petroquímica Básica, México, December 19, 1996.

“Regulating Argentina’s Gas Industry,” a report prepared for The Ministry of Economy and The World Bank, November 26, 1996.

“Open Access and Regulation,” prepared for Gascor, in the State of Victoria, Australia; (October 2, 1996).

“A Review and Critique of Russian Oil Transportation Tariffs (Russian Oil Transportation & Export Study; Commercial, Contractual & Regulatory Component),” prepared for The World Bank, June 13, 1996.

“Tariff Options for Transneft (Russian Oil Transportation & Export Study; Commercial, Contractual & Regulatory Component),” prepared for The World Bank, June 6, 1996.

“Comments on the Proposed Amendments to the Regulation of Airports in New Zealand,” prepared for the New Zealand Parliament Select Committee hearings on the regulation of monopolies, March 13, 1996.

“Evaluating the Shell Camisea Project,” prepared for Perupetro S.A., Government of Peru, December 8, 1995.

“Towards a Permanent Pricing and Services Regime,” prepared for British Gas, London, England, November, 1995.

**RECENT INTERNATIONAL REPORTS (CONTINUED)**

“Final Report: Gas Competition in Victoria,” prepared for Gas Industry Reform Unit, Office of State Owned Enterprises, June 1995.

“Natural Gas Tariff Study,” prepared for the World Bank, May 1995, consisting of:

*Principles and Tariffs of Open-Access Gas Transportation and Distribution Tariffs*

*Handbook for Calculating Open-Access Gas Transportation and Distribution Tariffs*

“Economic Implications of the Proposed Enerco/Capital Merger,” prepared for Natural Gas Corporation of New Zealand, December 1994.

“Contract Terms and Prices for Transportation and Distribution of Gas in the United States,” prepared for British Gas TransCo, November 1994.

“Economic Issues in Transport Facing British Gas,” prepared for British Gas plc, December 1993.

“Overview of Natural Gas Corporation's Open-Access Gas Tariffs and Contract Proposals,” prepared for Natural Gas Corporation of New Zealand, October 1993.

**PARTIAL LIST OF CLIENTS SERVED WORLDWIDE****ELECTRIC UTILITY**

AEP Energy Services, Inc  
 Alberta Power Limited  
 American Electric Power Company  
 Atlantic Electric Company  
 Boston Edison Company  
 Central Hudson Gas and Electric  
 Central Maine Power Company  
 Central Power & Light Company  
 Commonwealth Edison Company (Unicom/Exelon)  
 Commonwealth Energy System  
 Consolidated Edison Company of New York, Inc  
 Conowingo Power Company  
 Duquesne Light Company  
 Edison Electric Institute  
 Entergy Gulf States, Inc  
 Florida Power and Light Company  
 Green Mountain Power Company  
 Long Island Lighting Company  
 Massachusetts Municipal Wholesale Electric Company  
 Massachusetts Electric Company  
 Nantahala Power Company  
 New York State Electric & Gas Corporation  
 Niagara Mohawk Power  
 Ohio Power Company  
 Orange & Rockland Utilities  
 Pennsylvania Power and Light Company  
 Pennsylvania Power Company  
 Philadelphia Electric Company  
 PJM electricity transmission owners  
 Public Service Company of New Hampshire  
 Public Service Company of New Mexico  
 Public Service Electric and Gas Company  
 Portland General Electric Company  
 Reliant Energy HL&P  
 Rochester Gas and Electric Corp.  
 Sierra Pacific Power Corporation  
 Southwest Electric Power Company  
 Southwestern Public Service Company  
 Tampa Electric Company  
 Texas-New Mexico Power Company  
 TXU Electric Company  
 United Illuminating Company  
 UtiliCorp Networks Canada  
 Virginia Electric and Power Company  
 West Penn Power Company  
 West Texas Utilities Company  
 Western Massachusetts Electric Co.

**GAS UTILITY**

ARKLA, Inc.  
 Atlanta Gas Light Company  
 Bay State Gas Company  
 Berkshire Gas Company  
 Blackstone Gas Company  
 Boston Gas Company  
 Bristol & Warren Gas Company  
 British Gas plc  
 Brooklyn Union Gas Company  
 Canadian Western Natural Gas  
 Chattanooga Gas Company  
 Colonial Gas Company  
 Commonwealth Gas Company  
 Connecticut Natural Gas Corp.  
 Consolidated Gas Supply Corp.  
 Elizabethtown Gas Company  
 Empire State Pipeline Company  
 ENAGAS (Spain)  
 EnergyNorth, Inc.  
 Essex County Gas Company  
 Fall River Gas Company  
 Fitchburg Gas & Electric Light Company  
 Gas and Fuel Corporation of Victoria  
 Gateway Pipeline Company  
 Granite State Gas Transmission, Inc.  
 Great Falls Gas Company  
 Holyoke, Mass. Gas & Electric Dept.  
 ICG Utilities (Ontario) Ltd.  
 KN Energy, Inc.  
 Middleborough Municipal Gas & Electric  
 National Fuel Gas Distribution Corp.  
 Natural Gas Corporation of New Zealand  
 Natural Gas Pipeline of America  
 Norwich Department of Public Utilities  
 Pacific Gas Transmission  
 Pemex Gas y Petroquímica Básica  
 Pennsylvania Gas and Water Company  
 Peoples Gas Light and Coke Company  
 Providence Gas Company  
 Southern Connecticut Gas Company  
 Southwest Gas Corporation  
 Transwestern Pipeline Company  
 Valley Gas Company  
 Washington Gas Light Company  
 Westfield Gas & Electric Light Dept.  
 Wisconsin Gas Company  
 Yankee Gas Services Company

**PARTIAL LIST OF CLIENTS SERVED WORLDWIDE (CONT.)****TELEPHONE UTILITY**

Centel Corporation  
Chichester Telephone Company  
Community Service Telephone Company  
Continental Telephone Company of Illinois  
General Telephone of Pennsylvania  
General Telephone Company of Ohio  
Kearsarge Telephone Company  
Meriden Telephone Company  
Pacific Bell Telephone Company  
Tipton Telephone Company

**PARTIAL LIST OF CLIENTS SERVED WORLDWIDE (CONT.)****REGULATORY AND GOVERNMENT**

Delaware Public Service Commission

re: Delmarva Power & Light Company

District of Columbia Public Service Commission

re: Potomac Electric Power Company  
Washington Gas Light Company

Massachusetts Municipal Wholesale Electric Company

The Government of Chile

Gas industry regulations

The Government of Argentina

Plan for privatized rail freight industry regulation

The Government of Tanzania

Natural gas development and regulation plan for Songo Songo Island gas reserves.

Financing the development of gas reserves on Songo Songo Island with emphasis on payment guarantee mechanisms for foreign exchange.

The World Bank

re: Natural gas tariffs for Polskie Gornictwo Naftowe i Gazownictwo  
(The Polish Oil and Gas Company)

re: Natural gas transport and distribution tariffs for Gas del Estado  
(The Argentine State-owned gas utility)

re: Natural gas development for the Moroccan Gas System.

re: Natural gas transport and distribution tariffs for the Bolivian Gas Industry.

re: Natural gas development plan for Sichuan province of China.

**OTHER**

Air New Zealand

BHP Petroleum Pty Ltd

Centel Corporation

General Electric Company

Intel Corporation

Jamaica Water Supply Company

Nucor Steel Corporation

Parsons Brinckerhoff Development Group

**MEMBERSHIP IN****PROFESSIONAL ORGANIZATIONS**

The American Economic Association

**Nicor Gas Company**  
**Weighted Average Cost of Capital**

	<b>Nicor Gas Co. Capital Structure (Percent)<sup>1</sup></b>	<b>Average Cost (Percent)<sup>1</sup></b>	<b>Weighte Cost (Percent)</b>
Debt	43.11 %	6.80 %	2.93 %
Preferred Stock	0.12	4.77	0.01
Equity	56.77	11.05	6.27
<b>WACC</b>	100.00		<b>9.21 %</b>

**Cost of Equity Summary**

DCF Cost of Capital <sup>2</sup>	10.01%
CAPM <sup>3</sup>	
Method 1	13.87%
Method 2	10.33%
Average CAPM	12.10%
Average of DCF and CAPM	<b>11.05%</b>

[1] See: NICOR Gas Exhibit D-1.

[2] See: Exhibit 10.13.

[3] See: Exhibit 10.14.

Prepared by:

Jeff D. Makholm, Senior Vice President

National Economic Research Associates, Inc.

**Nicor Gas Company  
Comparable Group**

	<b>Company</b>	<b>Ticker Symbol</b>	<b>Revenue from Regulated Operations <sup>1</sup></b>	<b>NG as % of Utility Revenue</b>
1	Piedmont Natural	PNY	100.00%	100.00%
2	Northwest Nat. Gas	NWN	96.21%	100.00%
3	Southwest Gas	SWX	85.31%	100.00%
4	Nicor	GAS	82.85%	100.00%
5	Vectren Corp.	VVC	81.14%	74.48%
6	Avista Corp.	AVA	84.18%	41.06%
7	MGE Energy	MGEE	99.33%	36.74%
8	Wisconsin Energy	WEC	99.56%	35.95%
	Average		91.07%	73.53%

<sup>1</sup> From SEC Filings 10-K and Annual Reports. Data for 2006.



## SELECTION OF THE NATURAL GAS DISTRIBUTION UTILITY COMPANIES

The initial pool of utilities used to select a proxy group consisted of 12 natural gas utilities as reported in the *Value Line Investment Survey*:

AGL Resources, Inc.	Piedmont Natural Gas
Atmos Energy Corp.	South Jersey Industries, Inc.
Laclede Group	Southern Union Co.
New Jersey Resources	Southwest Gas
Nicor, Inc.	UGI Corp.
Northwest Natural Gas	WGL Holdings, Inc.

From this collection, those utilities that met the following criteria were included in the proxy group: (1) at least 80 percent of total operating revenue from gas LDC and electric utility operations; (2) not involved in a (possible or recently completed) take-over; and (3) dividend stability.

First, if a company's operating revenues from electricity and gas were less than 80 percent of its total revenues, the company was eliminated. Those companies eliminated under this criterion include:

AGL Resources, Inc.	South Jersey Industries, Inc.
Atmos Energy Corp.	Southern Union Co.
Laclede Group	UGI Corp.
New Jersey Resources	WGL Holdings, Inc.

The next criterion would eliminate from the group companies that are currently or had recently been involved in merger activity. None of the companies that remain in the group were affected by this criterion.

Third, stability in dividend payments is required for inclusion in the proxy group. I define stable dividend payments those that either remain constant or increase over 10 quarters. To determine this, I examined the *Value Line* company summaries as well as *Value Line*'s dividend estimates over 10 quarters for the remaining companies. All of the companies that remain in the group observed constant or increasing dividend. Therefore, no companies were eliminated using this criterion.

After all those companies were eliminated, the following companies remain in the proxy group:

Nicor, Inc.	Piedmont Natural Gas
Northwest Natural Gas	Southwest Gas

## SELECTION OF THE COMBINATION GAS AND ELECTRIC COMPANIES

The initial pool of combination gas and electric utilities used to select a proxy group consisted of 58 electric utilities as reported in the *Value Line Investment Survey*:

Allegheny Energy Corp.	IDACORP, Inc.
ALLETE	Integrus Energy Group, Inc.
Alliant Energy Corp.	MDU Resources Group, Inc.
Ameren Corp.	MGE Energy, Inc.
American Electric Power	NiSource Inc.
Aquila, Inc.	Northeast Utilities
Avista Corp.	NSTAR
Black Hills Corp.	OGE Energy Corp.
CenterPoint Energy	Otter Tail Corp.
Central Vermont Public Service	Pepco Holdings, Inc.
CH Energy Group	PG&E Corp.
Cleco Corp.	Pinnacle West Capital
CMS Energy Corp.	PNM Resources
Consolidated Edison	Portland General Electric
Constellation Energy Group, Inc.	PPL Corp.
Dominion Resources, Inc.	Progress Energy
DPL Inc.	Public Service Enterprise Group
DTE Energy Co.	Puget Energy, Inc.
Duke Energy Corp.	SCANA Corp.
Edison International	Sempra Energy
El Paso Electric	Sierra Pacific Res.
Empire District Electric	Southern Co.
Energy East Corp.	TECO Energy, Inc.
Entergy Corp.	UIL Holdings Corp.
Exelon Corp.	UniSource Energy
FirstEnergy Corp.	Vectren Corp.
FPL Group, Inc.	Westar Energy
Great Plains Energy Inc.	Wisconsin Energy
Hawaiian Electric	Xcel Energy Inc.

From this collection, those utilities that met the following criteria were included in the proxy group: 1) at least 80 percent of total operating revenue from utility operations; 2) total capitalization less than \$10 billion; 3) not involved in a merger; 4) dividend stability; and 5) At least one-third of its regulated operations came from Natural Gas.

First, if a company's operating revenues from electricity and gas were less than 80 percent of its total revenues, the company was eliminated. Those companies eliminated under this criterion are:

Black Hills Corp.  
CenterPoint Energy  
CH Energy Group  
Constellation Energy Group Inc.  
Dominion Resources, Inc.  
DTE Energy Co.  
Duke Energy Corp.  
Exelon Corp.  
FirstEnergy Corp.  
FPL Group, Inc.  
Great Plains Energy Inc.  
Integrus Energy Group

MDU Resources Group, Inc.  
NiSource Inc.  
OGE Energy Corp.  
Otter Tail Power  
Pepco Holdings, Inc.  
Pinnacle West Capital  
PNM Resources  
PPL Corp.  
Public Service Enterprise Group  
Sempra Energy  
TECO Energy, Inc.

Second, if a company's total capitalization was greater than \$10 billion, it was eliminated from the proxy group. This criterion is targeted at selecting a proxy group of an average size similar to Nicor Gas. Those eliminated include:

Ameren Corp.  
American Electric Power  
Consolidated Edison  
Edison International  
Entergy Corp.

PG&E Corp.  
Progress Energy  
Southern Co.  
Xcel Energy Inc.

Third, those companies that were currently or had recently been involved in merger activity were eliminated from the proxy group.

Energy East Corp.  
Puget Energy, Inc.

Fourth, stability in dividend payments is required for inclusion in the proxy group. I define stable dividend payments those that either remain constant or increase over 10 quarters. To determine this, I examined the *Value Line* company summaries as well as *Value Line*'s dividend estimates over 10 quarters for the remaining companies. The following companies were excluded from the proxy group:

Allegheny Energy Corp.  
Aquila, Inc.  
CMS Energy Corp.

El Paso Electric  
Portland General  
Sierra Pacific Res.

Lastly, companies for which less than one third of regulated activities came from Natural Gas were excluded from the proxy group. The eliminated companies were:

ALLETE  
Alliant Energy Corp.  
Central Vermont Public Service  
Cleco Corp.  
DPL Inc.  
Empire District Electric  
Hawaiian Electric

IDACORP, Inc.  
Northeast Utilities  
NSTAR  
SCANA Corp.  
UIL Holdings Corp.  
UniSource Energy  
Westar Energy

The four combination gas and electric companies that are included in my proxy group are:

Avista Corp.  
MGE Energy

Vectren Corp.  
Wisconsin Energy

**Nicor Gas Company**  
**Comparable Group**  
**Spot - Date Adjusted Stock Prices**

Company	Ticker Symbol	Ex-Dividend Date <sup>1</sup>		Stock Price Date	Days to Ex-Div Date	Percent Days Expired	Last Dividend	Adjusted Dividend	Closing Stock Price	Adjusted Stock Price
		Last [a]	Next [b]							
1 Piedmont Natural Gas	PNY	20-Dec-07	19-Mar-08	30-Jan-08	49	45.56	0.25	0.11	24.32	24.21
2 Northwest Nat. Gas	NWN	29-Jan-08	28-Apr-08	30-Jan-08	89	1.11	0.38	0.00	46.34	46.34
3 Southwest Gas	SWX	13-Nov-07	11-Feb-08	30-Jan-08	12	86.67	0.22	0.19	28.14	27.95
4 Nicor	GAS	27-Dec-07	26-Mar-08	30-Jan-08	56	37.78	0.47	0.18	39.85	39.67
5 Vectren Corp.	VVC	13-Nov-07	11-Feb-08	30-Jan-08	12	86.67	0.33	0.28	27.21	26.93
6 Avista Corp.	AVA	27-Nov-07	25-Feb-08	30-Jan-08	26	71.11	0.15	0.11	19.51	19.40
7 MGE Energy	MGEE	28-Nov-07	26-Feb-08	30-Jan-08	27	70.00	0.36	0.25	32.53	32.28
8 Wisconsin Energy	WEC	9-Nov-07	7-Feb-08	30-Jan-08	8	91.11	0.25	0.23	45.03	44.80

Notes:

[1]  $((90 - \text{Days to Ex-Div Date}) / 90) * 100$

[2] Yahoo! Finance Research, <http://finance.yahoo.com>. Closing prices on January 30, 2008.

Prepared by:

Jeff D. Makholm, Senior Vice President

National Economic Research Associates, Inc.

**Nicor Gas Company**  
**Comparable Group**  
**Dividends**

Company	Recent Quarterly Dividends Paid Per Share (D <sub>0</sub> )				Growth <sup>1</sup> Rate, g (Percent)	Expected Quarterly Dividend Growth Rate Per Share (D <sub>1</sub> )			
	Q <sub>1</sub> (\$/Share)	Q <sub>2</sub> (\$/Share)	Q <sub>3</sub> (\$/Share)	Q <sub>4</sub> (\$/Share)		Q <sub>1</sub> (\$/Share)	Q <sub>2</sub> (\$/Share)	Q <sub>3</sub> (\$/Share)	Q <sub>4</sub> (\$/Share)
1 Piedmont Natural Gas	0.250	0.250	0.250	0.250	5.08	0.26	0.26	0.26	0.26
2 Northwest Nat. Gas	0.355	0.355	0.355	0.375	5.85	0.38	0.38	0.38	0.40
3 Southwest Gas	0.205	0.215	0.215	0.215	7.18	0.22	0.23	0.23	0.23
4 Nicor	0.465	0.465	0.465	0.465	4.36	0.49	0.49	0.49	0.49
5 Vectren Corp.	0.315	0.315	0.315	0.325	5.47	0.33	0.33	0.33	0.34
6 Avista Corp.	0.145	0.145	0.150	0.150	4.12	0.15	0.15	0.16	0.16
7 MGE Energy	0.348	0.348	0.355	0.355	6.54	0.37	0.37	0.38	0.38
8 Wisconsin Energy	0.250	0.250	0.250	0.250	7.95	0.27	0.27	0.27	0.27
<b>Average</b>					<b>5.82</b>				

Notes:

[1] Simple Average of Value Line, Zacks earnings and BR+SV growth rates.

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## DERIVATION OF SUSTAINABLE GROWTH WITH EXTERNAL STOCK FINANCING

The sustainable growth formula is:

$$g = B * R$$

where:

$$B = \text{the expected retention rate} \quad (7.1)$$

$$R = \text{the rate of return expected to be earned on common equity.}$$

An assumption of the standard DCF model is that only one source of equity financing occurs, specifically the retention of earnings. That is, current dividends,  $D$ , are set at a constant percentage of normalized earnings, where normalized earnings are the expected rate of return on equity,  $R$ , applied to the current book value,  $V$ . Therefore, the sustainable growth formula is:

$$B = 1 - \frac{D}{(R_{av} * V)} \quad (7.1)$$

and the long-run sustainable growth rate is:

$$g = B * R_{av}$$

$$= \left( 1 - \frac{D}{(R_{av} * V)} \right) * R_{av} \quad (7.2)$$

$$= R_{av} - \frac{D}{V}$$

where:

$$D = \text{dividends declared per share, 2007-09 estimate}$$

$$V = \text{year-end book value per share, 2007-09 estimate}$$

$$R_{av} = \text{return on average equity, 2003.}$$

However, the issuance and sale of new common equity can also increase earnings and dividends. Thus, the growth rate must be expanded to allow for continuous new equity financing. In the expanded formula, two activities are recognized: (1) investment decisions that earn the rate of  $R_{av}$ , and (2) stock financing operations which earn the rate  $S * V$ .

The sustainable growth would then be:

$$g = B * R_{av} + S * V \quad (7.3)$$

where:

$B$  = the fraction of earnings to be expected to be retained

$R_{av}$  = the expected return on average equity

$S$  = funds raised from the sale of stock as a fraction of existing common equity

$V$  = the fraction of funds raised from the sale of stock that accrues to shareholders at the start of the period.

The  $S * V$  term is a measure of the impact on growth of the sale of stock at prices above or below book value. If stocks are sold at a price that exceeds book value, a portion of the funds goes to shareholders, whereas, if stocks are sold at a price less than book value, stockholders' equity will be diluted. For instance, given a market-to-book ratio of 1.3, abstracting from market pressure and selling costs, 23 percent of the funds raised in the issuance ( $1 - 1 / 1.3$ ) go to increasing the value of stockholders' pre-existing shares ( $V = 0.23$ ). If the new issuance is equal to 10 percent of the existing equity ( $S = 0.1$ ), then  $S * V = 0.023$ , meaning that ignoring the  $S * V$  term in such a circumstance would understate  $k_e$  (cost of equity) by 2.3 percent.

**Note:** The expanded growth rate (and hence, the expanded DCF formula) will reduce to the standard version either when: (1) the company does not regularly sell new stock,  $S = 0$ , or (2) the new stock is sold at a price that equals book value,  $V = 0$ .



In calculating the sustainable growth rate,  $g$ , in this testimony, the  $S$  and  $V$  terms were calculated for the comparable group of companies as follows:

$$V = 1 - \left( \frac{BVPS}{P_{stock}} \right) \quad (7.4)$$

where:

$P_{stock}$  = closing stock price

$BVPS$  = 2003 year-end book value per share

and,

$$S = \frac{Issuance_t}{CEQ_{t-1}} \quad (7.5)$$

where:

$Issuance_t$  = net proceeds the issuance of  
common stock in time period, t

$CEQ_{t-1}$  = total common equity in  
previous time period, t-1

An average  $S$  from 1999-2003 was multiplied by  $V$ . This product was then added to  $B * R$  to yield  $g$ , the sustainable growth rate.

**Note:** See Roger A. Morin, *Utilities' Cost of Capital*, (Arlington, Virginia: Public Utilities Reports, Inc., 1984), pp. 99-102, for a full discussion of the DCF model considering external financing.

**Nicor Gas Company**  
**Comparable Group**  
**Sustainable Growth Method**

Company	R	D <sub>e</sub>	V <sub>e</sub>	V		R <sub>av</sub>	B <sup>3</sup>	B*R <sup>4</sup>	S*V Average <sup>5</sup>	B*R+S*V
	Estimated	Estimated	Estimated	Book Value		Return on				
	Return on	Dividend	Book Value	Per Share		Average				
	Common Equity <sup>1</sup>	Per Share <sup>1</sup>	Per Share <sup>1</sup>	2006	2005	Equity <sup>2</sup>	(Percent)	(Percent)	(Percent)	(Percent)
	(Percent)	(\$)	(\$)	(\$)	(\$)	(Percent)				
1 Piedmont Natural Gas	12.00	1.16	13.40	11.83	11.53	12.15	28.78	3.50	1.52	5.02
2 Northwest Nat. Gas	11.50	1.92	26.35	22.01	21.28	11.69	37.69	4.41	0.83	5.23
3 Southwest Gas	10.50	0.90	25.25	21.58	19.10	11.14	68.00	7.58	1.18	8.76
4 Nicor	11.50	1.86	25.75	19.43	18.36	11.83	38.92	4.60	0.12	4.72
5 Vectren Corp.	10.50	1.43	19.55	15.43	15.01	10.64	31.29	3.33	1.05	4.38
6 Avista Corp.	8.50	1.10	20.75	17.46	15.87	8.91	40.47	3.60	0.20	3.81
7 MGE Energy	14.00	1.50	18.70	17.89	16.81	14.44	44.43	6.41	1.91	8.32
8 Wisconsin Energy	11.50	1.60	32.75	24.70	22.91	11.93	59.06	7.05	0.12	7.17
<b>Average:</b>										<b>5.92 %</b>

*The Value Line Investment Survey, November 9, December 14, and December 28, 2007.*

Notes:

[1] 2010-2012 estimated return on common equity, dividends per share, and book value per share as reported in Value Line.

[2]  $R_{av} = (2 * R * V_{01}) / (V_{01} + V_{00})$ .

[3]  $B = 1 - (D_e / (R_{av} * V_e))$ .

[4]  $B * R = B * R_{av} = (R_{av} - D_e / V_e)$ .

[5]  $S * V$  equals five year average of S, multiplied by current V, where S = annual growth rate of common shares outstanding and V = fraction of new funds provided that accrues to original shareholders.

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**Nicor Gas Company**  
**Comparable Group**  
**S and V Estimation**

Company	Growth Rate of Common Shares Outstanding (S)					Average S <sup>1</sup>	V <sup>2</sup>	S*V (h)=[(f)*(g)]
	2002 (a)	2003 (b)	2004 (c)	2005 (d)	2006 (e)			
1 Piedmont Natural Gas	0.0193	0.0171	0.1391	0.0004	(0.0272)	0.0297	0.5113	0.0152
2 Northwest Nat. Gas	0.0143	0.0137	0.0621	0.0011	(0.0123)	0.0158	0.5250	0.0083
3 Southwest Gas	0.0246	0.0282	0.0748	0.0690	0.0620	0.0517	0.2280	0.0118
4 Nicor	(0.0088)	0.0007	0.0014	0.0018	0.0163	0.0023	0.5103	0.0012
5 Vectren Corp.	0.0046	0.1116	0.0040	0.0038	(0.0012)	0.0246	0.4270	0.0105
6 Avista Corp.	0.0086	0.0062	0.0027	0.0025	0.0807	0.0201	0.1002	0.0020
7 MGE Energy	0.0293	0.0438	0.1118	0.0029	0.0259	0.0428	0.4458	0.0191
8 Wisconsin Energy	0.0053	0.0207	(0.0122)	(0.0001)	(0.0001)	0.0027	0.4487	0.0012

Source: *The Value Line Investment Survey*, November 9, December 14, and December 28, 2007.

Notes:

[1] Average common shares outstanding growth rate for 2002-2006.

[2] V = (1-(2006 Book Value per Share/Average Stock Price))

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**Nicor Gas Company  
Comparable Group  
Growth Rate Estimates**

Company	Value Line EPS <sup>1</sup>		Estimated VL Growth <sup>2</sup> (Percent)	Zacks Growth <sup>3</sup> (Percent)	B*R+S*V Growth (Percent)	Average Growth <sup>4</sup> (Percent)
	2006 (\$)	2010-2012 (\$)				
1 Piedmont Natural Gas	1.27	1.60	4.73	5.50	5.02	5.08
2 Northwest Nat. Gas	2.35	3.30	7.03	5.30	5.23	5.85
3 Southwest Gas	1.98	2.60	5.60	N/A	8.76	7.18
4 Nicor	3.03	2.90	NMF	4.00	4.72	4.36
5 Vectren Corp.	1.44	2.05	7.32	4.70	4.38	5.47
6 Avista Corp.	1.47	1.75	3.55	5.00	3.81	4.12
7 MGE Energy	2.06	2.60	4.77	N/A	8.32	6.54
8 Wisconsin Energy	2.64	3.75	7.27	9.40	7.17	7.95
<b>Average:</b>			<b>5.75 %</b>	<b>5.65 %</b>	<b>5.92 %</b>	<b>5.82 %</b>

Notes:

[1] *The Value Line Investment Survey*, November 9, December 14, and December 28, 2007.

[2]  $([2010-2012 \text{ EPS Estimate}]/[2006 \text{ EPS}]^{0.20-1}) * 100$ .

[3] Estimated Long Term EPS Growth Rate for the next five years as reported by Zacks in its Full Company Reports at <http://www.zacks.com>.

[4] Simple average of Estimated Value Line growth, Zacks growth, and B\*R+S\*V growth.

NMF = Not Meaningful Figure

NA = Not Available

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**Nicor Gas Company**  
**Equity Issuance Expense <sup>4</sup>**

SEC Filing Date	Number of Shares Issued (No.)	Price/Share (\$)	Proceeds (\$)	Per Share Underwriting Discounts & Commissions (\$)	Total Underwriting Discounts & Commissions (\$)	Net Proceeds <sup>1</sup> (\$)	Estimated Company's Expenses (\$)	Selling & Issuance Costs <sup>2</sup> (Percent)	
7/25/1979	1,500,000	31.50	47,250,000	0.83	1,245,000	46,005,000	80,000	2.80	%
8/26/1980	1,500,000	32.50	48,750,000	0.89	1,335,000	47,415,000	90,000	2.92	
<b>Average</b>				<b>0.86</b>	<b>1,290,000</b>	<b>46,710,000</b>	<b>85,000</b>	<b>2.86</b>	<b>%</b>
<b>Borun and Malley <sup>3</sup></b>								<b>5.50</b>	
<b>Average Expense</b>								<b>4.18</b>	
<b>Issuance Expense Adjustment</b>								<b>95.82</b>	<b>%</b>

Notes:

[1] Net Proceeds = Proceeds - Total Underwriting Discounts & Commissions.

[2] Selling & Issuance Costs = (Total Underwriting Discounts & Commissions + Estimated Company's Expenses)/Proceeds.

[3] Victor M. Borun and Susan L. Malley, "Total Flotation Costs for Electric Company Equity Issues."

[4] Issuance data is derived from NICOR Gas Exhibit D-5.

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**Nicor Gas Company**  
**Comparable Group**  
**DCF Cost of Equity**

Company	Dividend <sup>1</sup>	Growth <sup>2</sup>	Adjusted <sup>3</sup>	Stock Price <sup>4</sup>	Unadjusted <sup>5,6</sup>	Change	S&I <sup>7</sup>
	Yield (Percent)	Rate, g (Percent)	Stock Price, P <sub>0</sub> (\$)	S&I Adjusted (\$)	ROE, k <sub>e</sub> Before S&I (Percent)		Adjusted ROE (Percent)
1 Piedmont Natural Gas	4.50	5.08	24.21	23.19	9.58	0.20	9.77
2 Northwest Nat. Gas	3.40	5.85	46.34	44.40	9.26	0.15	9.40
3 Southwest Gas	3.39	7.18	27.95	26.78	10.56	0.15	10.71
4 Nicor	5.07	4.36	39.67	38.02	9.43	0.22	9.65
5 Vectren Corp.	5.17	5.47	26.93	25.80	10.64	0.22	10.86
6 Avista Corp.	3.25	4.12	19.40	18.59	7.37	0.14	7.51
7 MGE Energy	4.84	6.54	32.28	30.93	11.38	0.21	11.59
8 Wisconsin Energy	2.50	7.95	44.80	42.93	10.45	0.11	10.56
<b>Average</b>					<b>9.83 %</b>	<b>0.18 %</b>	<b>10.01 %</b>

Notes:

[1] Forward Quarterly Dividend per Share ( $Q_t$ ) =  $\{[Q_f^*(1+ke)^{0.75}+Q_f^*(1+ke)^{0.5}+Q_f^*(1+ke)^{0.25}+Q_f]/P_0\} * (1+Growth Rate)$

[2] Simple Average of Value Line, Zacks earnings and BR+SV growth rates.

[3] Spot-Date Adjusted Stock Price. See Exhibit 10.6.

[4] Adjusted Price=0.9582\*Ex-Div Price. Adjustment based on flotation cost of 4.18 percent.

[5] Calculated using Quarterly DCF Formula: Cost of Equity ( $ke$ ) =  $\{[Q_t^*(1+ke)^{0.75}+Q_t^*(1+ke)^{0.5}+Q_t^*(1+ke)^{0.25}+Q_t]/P_0\}$

[6] Not adjusted for selling and issuance expenses.

[7] ROE adjusted by selling and issuance expenses.

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**Nicor Gas Company**  
**Comparable Group**  
**Capital Asset Pricing Model (CAPM)**

<b>No. Company</b>	<b>30-Year T-Bond Return (Rf)<sup>1</sup></b>	<b>Beta Value Line<sup>2</sup></b>	<b>Market Risk Premium</b>	<b>CAPM Cost of Equity<sup>5</sup></b>
			<b>Top-Down DCF - 30 Yr T- Bond Return<sup>3,4</sup></b>	<b>Top-Down DCF - 30 Yr T-Bond Return</b>
	%			%
1 Piedmont Natural Gas	4.31	0.85	10.41	13.16
2 Northwest Nat. Gas	4.31	0.90	10.41	13.68
3 Southwest Gas	4.31	0.90	10.41	13.68
4 Nicor	4.31	1.00	10.41	14.72
5 Vectren Corp.	4.31	0.90	10.41	13.68
6 Avista Corp.	4.31	1.00	10.41	14.72
7 MGE Energy	4.31	0.95	10.41	14.20
8 Wisconsin Energy	4.31	0.85	10.41	13.16
<b>Average</b>		<b>0.92</b>		<b>13.87</b>

Notes:

[1] From *The Value Line Selection and Opinion*, February 1, 2008.

[2] *The Value Line Investment Survey*, November 9, December 14, and December 28, 2007.

[3] The formula used is Risk Premium =  $[(Do \cdot (1+g)) + g] - R_f$

[4] Dividend yield for S&P 500 is from Standard & Poors Online, Indices, S&P 500, Month End Data. See Exhibit 10.15. Five-year earnings growth rate is from Reuters

[5] Cost of Equity =  $R_f + \text{Beta} (RM - R_f)$ , where  $R_f$  is the return on the 30-year Treasury Bond, and  $(RM - R_f)$  is the market premium computed as described in footnote [3] and [4].

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**Nicor Gas Company  
Comparable Group  
Capital Asset Pricing Model (CAPM)**

No.	Company	30-Year T- Bond Return (Rf) <sup>1</sup> %	Beta Value Line <sup>2</sup>	Market Risk Premium	CAPM Cost of Equity <sup>4</sup>
				(I/S) <sup>3</sup> 1926-2006	Value Line, (I/S) 1926-2006
					%
1	Piedmont Natural Gas	4.31	0.85	6.55	9.88
2	Northwest Nat. Gas	4.31	0.90	6.55	10.21
3	Southwest Gas	4.31	0.90	6.55	10.21
4	Nicor	4.31	1.00	6.55	10.86
5	Vectren Corp.	4.31	0.90	6.55	10.21
6	Avista Corp.	4.31	1.00	6.55	10.86
7	MGE Energy	4.31	0.95	6.55	10.53
8	Wisconsin Energy	4.31	0.85	6.55	9.88
	<b>Average</b>		<b>0.92</b>		<b>10.33</b>

Notes:

[1] From *The Value Line Selection and Opinion*, February 1, 2008.

[2] *The Value Line Investment Survey*, November 9, December 14, and December 28, 2007.

[3] Computed as the difference between the arithmetic averages of annual returns over the periods 1926-2006 from [a] large company stocks, and [b] long-term government bonds, from Ibbotson Associates, 2006 Yearbook.

[4] Cost of Equity = Rf + Beta (RM - Rf), where Rf is the return on the 30-year Treasury Bond, and (RM - Rf) is the market premium computed as described in footnote [3].

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**Nicor Gas Company**  
**DCF of the S&P 500**

Dividend Yield S&P 500 <sup>1</sup>	1.96 %
Growth Rate S&P 500 <sup>2</sup>	12.42 %
DCF S&P 500 <sup>3</sup>	14.62 %
Issuance Expense	0.10 %
Total DCF S&P 500	14.72 %

Notes:

[1] From Standard & Poor's S&P 500 Earnings and Estimate Report at  
[http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/  
indices\\_500/2,3,2,2,0,0,0,0,0,5,11,0,0,0,0,0.html](http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/indices_500/2,3,2,2,0,0,0,0,0,5,11,0,0,0,0,0.html)

[2] Reuters, February 6, 2008.

[3]  $DCF = (Div\ Yield * (1 + Growth)) + Growth$

[4]  $Total\ DCF = (DCF\ S\&P\ 500)(1 - Average\ Issuance\ Expense) + Growth\ Rate\ S\&P\ 500$

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**Nicor Gas Company**  
**Gas Rate Cases in Other Jurisdictions 2007-January 2008**

Return on			Return on		
Equity			Equity		
Company	Date	(%)	Company	Date	(%)
Puget Sound Energy Inc.	1/5/2007	10.40	Consumers Energy Co.	8/21/2007	NA
SEMCO Energy Inc.	1/9/2007	11.00	Columbia Gas of Kentucky Inc	8/29/2007	10.50
Wisconsin Public Service Corp	1/11/2007	10.90	Northern States Power Co. - MN	9/10/2007	9.71
Cascade Natural Gas Corp.	1/12/2007	NA	Washington Gas Light Co.	9/19/2007	10.00
Wisconsin Power and Light Co	1/19/2007	10.80	Consolidated Edison Co. of NY	9/25/2007	9.70
Fitchburg Gas & Electric Light	1/26/2007	NA	Atmos Energy Corp.	10/8/2007	10.48
PPL Gas Utilities Corp	2/8/2007	10.40	Delta Natural Gas Co.	10/19/2007	10.50
CT Natural Gas Corp.	3/14/2007	10.10	CenterPoint Energy Resources	10/25/2007	9.65
Union Electric Co.	3/15/2007	NA	Washington Gas Light Co.	11/15/2007	10.00
Delmarva Power & Light Co.	3/20/2007	10.25	Arkansas Oklahoma Gas Corp.	11/20/2007	9.90
Pacific Gas and Electric Co.	3/21/2007	11.35	UNS Gas Inc.	11/27/2007	10.00
Southern Union Co.	3/22/2007	10.50	Cheyenne Light Fuel Power Co.	11/29/2007	10.90
Atmos Energy Corp.	3/29/2007	10.00	National Fuel Gas Dist Corp.	12/12/2007	9.10
Aquila Inc.	5/16/2007	NA	Madison Gas and Electric Co.	12/14/2007	10.80
Northern States Power Co. - MN	6/13/2007	10.75	NorthWestern Energy Division	12/18/2007	10.40
Public Service Co. of NM	6/29/2007	9.53	NorthWestern Energy Division	12/18/2007	NA
Yankee Gas Services Co.	6/29/2007	10.10	Brooklyn Union Gas Co.	12/19/2007	9.80
Public Service Co. of CO	7/3/2007	10.25	KeySpan Gas East Corp.	12/19/2007	9.80
Arkansas Western Gas Co.	7/13/2007	9.50	Avista Corp.	12/19/2007	10.20
Laclede Gas Co.	7/19/2007	NA	Washington Gas Light Co.	12/28/2007	NA
Aquila Inc.	7/24/2007	10.40	Northern States Power Co-WI	1/8/2008	10.75
Atmos Energy Corp.	7/31/2007	NA	Wisconsin Electric Power Co.	1/17/2008	10.75
Southern Indiana Gas & Elec Co	8/1/2007	10.15	Wisconsin Gas LLC	1/17/2008	10.75
			Average		<b>10.27</b>

Source: Regulatory Research Associates

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